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10/652,030	09/02/2003	Hiroaki Obara	Q77205	1535

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EXAMINER

EHNE, CHARLES

ART UNIT	PAPER NUMBER
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2113

DATE MAILED: 09/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/652,030

Applicant(s)

OBARA, HIROAKI

Examiner

Charles Ehne

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 6/30/06.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over unpatentable over Styczinski (5,959,860) taken in view of Johnson (6,341,356).

As to claim 1, Styczinski discloses a fault tolerant computer having a disk multiplexing mechanism which multiplexes a plurality of storage devices (column 4, lines 32-34) comprising:

a disk management mechanism which inputs, when a fault such as a failure of said storage device occurs, physical position information of said storage device and operation contents related to the storage device in question to instruct said disk

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multiplexing mechanism on restoration operation including cut-off and integration operation of said storage device (column 12, lines 1- 12).

Styczinski fails to disclose an access path multiplexing mechanism which sets and multiplexes a plurality of access paths for said plurality of storage devices.

Johnson discloses a system providing an interface to at least one device driver to control access to a plurality of paths to a plurality of storage subsystems (Abstract, lines 7-12). Johnson does disclose an access path multiplexing mechanism which sets and multiplexes a plurality of access paths for said plurality of storage devices (Figure 3, column 3, lines 10-14).

It would have been obvious to one of ordinary skill in the art at the time of invention by applicant to implement Johnson's multiplexing mechanism which sets and multiplexes a plurality of access paths for said plurality of storage devices with Styczinski's fault tolerant computer having a plurality of storage devices. A person of ordinary skill in the art would have been motivated to make the modification because multiple paths provide redundancy, which allow the system to decrease the possibility of losing data stored in a particular storage device (Johnson: columns 1-2, lines 65-2).

As to claim 2, Johnson discloses the fault tolerant computer as set forth in claim 1, wherein said disk management mechanism includes

a data base which stores said physical position information of said storage device and information about an access path to said storage device so as to correspond with each other for each said storage device (column 3, lines 33-38).

As to claim 3, Johnson & Styczinski disclose the fault tolerant computer as set forth in claim 2, wherein

said disk management mechanism sends

said access path information corresponding to said physical position information obtained from said data base together with said operation contents to said disk multiplexing mechanism to instruct on restoration operation including cut-off and integration operation of said storage device (Johnson: column 3, lines 47-55 & Styczinski: column 12, lines 9-12).

As to claim 4, Johnson discloses the fault tolerant computer as set forth in claim 2, further comprising:

first access element which sends said access path information corresponding to said physical position information obtained from said data base to said access path multiplexing mechanism to receive, from said access path multiplexing mechanism which manages said access path information, a virtual access path served for said disk multiplexing mechanism to recognize said storage device, which is a virtual access path obtained by bundling said plurality of access paths into one (column 3, lines 33-38 & lines 42-50), and

second access element which sends path information composed of said virtual access path received by said first access element and said operation contents to said disk multiplexing mechanism (column 3, lines 29-32).

As to claim 5, Styczinski discloses the fault tolerant computer as set forth in claim 2, wherein said disk management mechanism includes interface element which

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receives input of physical position information of said storage device and operation contents related to the storage device in question, as well as receives operation results of said operation contents from said disk multiplexing mechanism (column 5, lines 30-31 & column 6, lines 5-12).

As to claim 6, Johnson discloses the fault tolerant computer as set forth in claim 2, further comprising:

first access element which sends said access path information corresponding to said physical position information obtained from said data base to said access path multiplexing mechanism to receive, from said access path multiplexing mechanism which manages said access path information, a virtual access path served for said disk multiplexing mechanism to recognize said storage device, which is a virtual access path obtained by bundling said plurality of access paths into one (column 3, lines 33-38 & lines 42-50), and

second access element which sends path information composed of said virtual access path received by said first access element and said operation contents to said disk multiplexing mechanism (column 3, lines 29-32), wherein

said disk management mechanism includes interface element which receives input of physical position information of said storage device and operation contents related to the storage device in question, as well as receives operation results of said operation contents from said disk multiplexing mechanism (column 4, lines 22-23).

As to claim 7, Styczinski discloses a disk management mechanism of a fault tolerant computer having a disk multiplexing mechanism which multiplexes a plurality of

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storage devices when a fault such as a failure of said storage device occurs, wherein physical position information of said storage device and operation contents related to the storage device in question are input to instruct said disk multiplexing mechanism on restoration operation including cut-off and integration operation of said storage device (column 12, lines 1- 12).

Styczinski fails to disclose an access path multiplexing mechanism which sets and multiplexes a plurality of access paths for said plurality of storage devices.

Johnson discloses a system providing an interface to at least one device driver to control access to a plurality of paths to a plurality of storage subsystems (Abstract, lines 7-12). Johnson does disclose an access path multiplexing mechanism which sets and multiplexes a plurality of access paths for said plurality of storage devices (Figure 3, column 3, lines 10-14).

It would have been obvious to one of ordinary skill in the art at the time of invention by applicant to implement Johnson's multiplexing mechanism which sets and multiplexes a plurality of access paths for said plurality of storage devices with Styczinski's fault tolerant computer having a plurality of storage devices. A person of ordinary skill in the art would have been motivated to make the modification because multiple paths provide redundancy, which allow the system to decrease the possibility of losing data stored in a particular storage device (Johnson: columns 1-2, lines 65-2).

As to claim 8, Johnson discloses the disk management mechanism of a fault tolerant computer as set forth in claim 7, including

a data base which stores said physical position information of said storage device and information about an access path to said storage device so as to correspond with each other for each said storage device (column 3, lines 29-38).

As to claim 9, Johnson & Styczinski disclose disk management mechanism of a fault tolerant computer as set forth in claim 8, wherein

said access path information corresponding to said physical position information obtained from said data base is sent together with said operation contents to said disk multiplexing mechanism to instruct on restoration operation including cut-off and integration operation of said storage device (Johnson: column 3, lines 47-55 & Styczinski: column 12, lines 9-12).

As to claim 10, Johnson discloses the disk management mechanism of a fault tolerant computer as set forth in claim 8, further comprising:

first access element which sends said access path information corresponding to said physical position information obtained from said data base to said access path multiplexing mechanism to receive, from said access path multiplexing mechanism which manages said access path information, a virtual access path served for said disk multiplexing mechanism to recognize said storage device, which is a virtual access path obtained by bundling said plurality of access paths into one (column 3, lines 33-38 & lines 42-50), and

second access element which sends path information composed of said virtual access path received by said first access element and said operation contents to said disk multiplexing mechanism (column 3, lines 29-32).

As to claim 11, Styczinski discloses the disk management mechanism of a fault tolerant computer as set forth in claim 8, further comprising

interface element which receives input of physical position information of said storage device and operation contents related to the storage device in question, as well as receives operation results of said operation contents from said disk multiplexing mechanism (column 5, lines 30-31 & column 6, lines 5-12).

As to claim 12, Johnson discloses the disk management mechanism of a fault tolerant computer as set forth in claim 8, further comprising:

first access element which sends said access path information corresponding to said physical position information obtained from said data base to said access path multiplexing mechanism to receive, from said access path multiplexing mechanism which manages said access path information, a virtual access path served for said disk multiplexing mechanism to recognize said storage device, which is a virtual access path obtained by bundling said plurality of access paths into one (column 3, lines 33-38 & lines 42-50),

second access element which sends path information composed of said virtual access path received by said first access element and said operation contents to said disk multiplexing mechanism (column 3, lines 29-32), and

interface element which receives input of physical position information of said storage device and operation contents related to the storage device in question, as well as receives operation results of said operation contents from said disk multiplexing mechanism (column 4, lines 22-23).

As to claim 13, Styczinski discloses a disk management program of a fault tolerant computer having a disk multiplexing mechanism which multiplexes a plurality of storage devices, which executes,

when a fault such as a failure of said storage device occurs, a function of instructing said disk multiplexing mechanism on restoration operation including cut-off and integration operation of said storage device by inputting physical position information of said storage device and operation contents related to the storage device in question (column 12, lines 1-12).

Styczinski fails to disclose an access path multiplexing mechanism which sets and multiplexes a plurality of access paths for said plurality of storage devices.

Johnson discloses a system providing an interface to at least one device driver to control access to a plurality of paths to a plurality of storage subsystems (Abstract, lines 7-12). Johnson does disclose an access path multiplexing mechanism which sets and multiplexes a plurality of access paths for said plurality of storage devices (Figure 3, column 3, lines 10-14).

It would have been obvious to one of ordinary skill in the art at the time of invention by applicant to implement Johnson's multiplexing mechanism which sets and multiplexes a plurality of access paths for said plurality of storage devices with

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Styczinski's fault tolerant computer having a plurality of storage devices. A person of ordinary skill in the art would have been motivated to make the modification because multiple paths provide redundancy, which allow the system to decrease the possibility of losing data stored in a particular storage device (Johnson: columns 1-2, lines 65-2).

As to claim 14, Johnson discloses the disk management program of a fault tolerant computer as set forth in claim 13, which executes the functions of:

sending, to said access path multiplexing mechanism, access path information corresponding to said physical position information obtained from a data base which stores said physical position information of said storage device and said access path information to said storage device so as to correspond with each other for each said storage device and receiving, from said access path multiplexing mechanism which manages said access path information, a virtual access path served for said disk multiplexing mechanism to recognize said storage device, which is a virtual access path obtained by bundling said plurality of access paths into one (column 3, lines 33-38 & lines 42-50), and

sending path information composed of said virtual access path received and said operation contents to said disk multiplexing mechanism (column 3, lines 33-38).

As to claim 15, Johnson discloses the disk management program of a fault tolerant computer as set forth in claim 14, which executes

an interface function of receiving input of physical position information of said storage device and operation contents related to the storage device in question, as well

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as receiving operation results of said operation contents from said disk multiplexing mechanism (column 3, lines 33-35 & column 4, lines 22-23).

Response to Arguments

Applicant's arguments filed 6/30/2006 have been fully considered but they are not persuasive.

Applicant states on page 12, "One having skill in the art would not look to combine these two teachings for two reasons..."

Examiner respectfully disagrees. A person of ordinary skill in the art would have been motivated to make the modification because multiple paths provide redundancy, which allow the system to decrease the possibility of losing data stored in a particular storage device (Johnson: columns 1-2, lines 65-2).

Applicant states on page 13, "Styezinski and Johnson may be combined, the combination still does not teach or suggest every feature of the claims. For example, claim 1 recites, inter alia, the limitation that when a fault of one of the storage devices occurs, a disk management mechanism inputs physical position information of the failed storage device and operation contents of the failed storage device to instruct the disk multiplexing mechanism on restoration operation".

Examiner respectfully disagrees. Styezinski discloses an uncommitted list 212 that is a variable length list of addresses on assist unit 104 where the respective incomplete write operations are stored. In the event of a failure of one of the service

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units the controller completes the writes in the remaining active service units (column 12, lines 19-41).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles Ehne whose telephone number is (571)-272-2471. The examiner can normally be reached on Monday-Friday 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Beausoliel can be reached on (571)-272-3645. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


ROBERT W. BEAUSOLEIL
PATENT EXAMINER
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